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For the Advocate of Science.

GEOLOGY, No. 9.

Recapitulation.—Dykes occur frequently in coal mines. A dyke is a perpendicular wall, mostly of basalt. The coal strata are deranged by it, being lower on one side than on the other. Next above coal is a series of strata, composed of *marl*, and *sandstone, &c.* containing *gypsum* and *rock salt.* Rock salt appears to have resulted from the evaporation of salt lakes. Caspian and Dead seas are salt. *Salt licks* formed by evaporation of water of salt springs. Mount Cardona composed of salt. Salt mines of Poland most extensive in the world. *Lias clay* and *lias limestone*, contain the remains of gigantic animals and vegetables, in great quantity—some of these animals were of extraordinary magnitude, and had membranous wings. *Chalk* is the highest secondary stratum; contains many petrified shells, well preserved, and often changed into flint, of a kind not met with in any other stratum, and not now living in the ocean. Hence it is inferred that their races were exterminated during the deposition of the chalk formation.

Important inference from the position of Chalk.—Another important fact is inferred from the position of the chalk formation. The primitive, transition, and *lower secondary* strata, we observed to deviate from a horizontal situation in forming the sides of mountains; showing that the mountains were made or protruded *after* the formation of these strata. But the chalk stratum is horizontal or nearly so, and not upraised and broken by mountains; showing that the mountains of the earth's surface were constructed prior to the deposition of chalk, and consequently, that since the chalk formation was made, the surface of the globe has not been disturbed to any great extent, by convulsions such as previously transpired, which have left their history deeply graven on the older rocks.

Flint in Chalk.—This is the grand repository of flint, which is found imbedded in the chalk, in nodules or masses, of almost every shape. It is remarkable that two substances so unlike should be so uniformly associated together. No explanation of the circumstance has yet been given. Not unfrequently, fossils are completely converted into flint; or at least, the cavities which the animals once occupied in the chalk, and from which they have been removed, are now occupied by masses of flint, moulded into the same form.

Scenery of Chalk.—Chalk being soft, and easily worn away by the action of water, the hills composed of it are always very evenly rounded; and unless an artificial soil has been deposited on the surface, they are wholly destitute of vegetation. On this account, chalk countries present a peculiar scenery. On one of the chalk hills of England, it is said that a shepherd's boy, some years ago, in order to immortalize his name, carved the figure of a horse so large as to cover eight acres. This monument of perseverance and boyish ambition can be seen at the distance of 15 miles.

No Chalk in the United States.—Chalk has not yet been discovered in the United States, nor in any other part of America. An impure limestone deposit, however, has been found in Burlington county, New Jersey, which contains the same kind of fossils, thus stamping upon it the same date or age as the chalk formation of Great Britain and other countries.

Progress made in our subject, and review &c.—Here concludes our examination of the three first classes of strata: primary, transition, and secondary. Nearly every formation indicates some important changes and revolutions in the history of the globe we inhabit. During the creation of the primary rocks, the earth was totally devoid of inhabitants. Whilst the transition strata were forming, plants and animals of a character suited to the then condition of the world, began their existence. Marine shell fish, and aquatic vegetables accordingly were the first of living creatures. As the dry land increased, plants became more abundant; not the forest trees of the present day, but gigantic ferns and reeds, without a parallel in modern times. Coincident with the supply of food furnished by this luxurian; vegetation, existed enormous herbivorous reptiles, of the lizard tribe. Inundations and other commotions were of frequent occurrence, giving rise to new strata, exterminating the existing families of plants and animals, and preparing the earth for a new creation of inhabitants, to be annihilated in their turn by a renewal of similar catastrophes. This changeable condition of things was not adapted to the existence of the higher orders of animals. Hence, there are no vestiges of quadrupeds in any of the strata hitherto examined in these classes. I will now pass to the consideration of the *tertiary* formations, when we shall observe the same alternation of revolution and quiescence, of creation and destruction, with a progressive improvement in the condition of the earth, and a corresponding advance toward perfection in the vegetable and animal population.

General character of the Tertiary class.—The tertiary formations occur in local beds or patches, never extending over a great portion of the globe, like those of the preceding classes. They appear to have been formed along the borders of continents, and in the beds of ancient lakes. The materials which compose them are principally lime, sand, and clay; the lime being derived chiefly from animals, and existing in the form of shells more or less perfectly preserved, and mingled with sand and clay by the action of the water.

Their age inferred.—The tertiary formations were made after the chalk stratum. This fact is inferred not only from their relative situation, but also from the character of the animal relics which they contain. The bones discovered in them, belong to the more perfect orders of animals, of which some of the races still live on the earth.

The Paris basin.—The basin on which the city of Paris is built affords a good example of this class. That district appears to have once been the site of a lake, the concavity of which has been filled by a succession of distinct deposits. Some of these deposits contain sea shells, others fresh water shells, some reptiles and aquatic plants, others the quadrupeds and plants of dry land. During the formation of the lower beds of the series, the predominance of the ocean, or at least of salt water, is proved by the character of the shells imbedded in them. In this marine formation, no less than *six hundred* different species of shells have been detected. The strata containing these numerous remains of animals unknown to our present ocean, are covered by several layers of a very different complexion, which are composed chiefly of gypsum or plaster of Paris. The latter name is derived from the large supply of this mineral furnished by that locality. Buried in these strata of gypsum are abundant remains of land animals, and of the inhabitants of fresh water—the bones of turtles and crocodiles, and the scattered bones of birds and unknown quadrupeds. Above this fresh water formation is another set of deposits resembling the deepest ones in containing marine productions. Lastly, above this marine formation, is a fourth series resembling the second, being filled with the relics of animals which inhabited either the land, or fresh water.

The formation of the Paris basin explained.—From the facts above stated, we necessarily infer, that the hollow presented by the rocky foundation of these tertiary strata, was originally occupied by a lake, the water of which was alternately fresh and salt. By communicating with the ocean, the lake probably derived its first supply of salt water, which filled it whilst the deposition of the first series of beds was progressing. By some accidental cause the passage to the ocean was then filled up, and the waters of the lake became fresh in consequence of the supply furnished by the inflowing rivers. During this condition of things, the second formation of *fresh water* beds was made. Then, the barrier between the lake and the ocean being swept away, the salt water resumed its place, and gave its

peculiar character to the third formation, composed of *marine* beds. By a repetition of the previous process, the water of the lake now became fresh a second time, and the fourth and uppermost series of strata, composing the second *fresh water* formation, was then constructed.

Mixture of salt water and fresh water productions.—Occasionally, a stratum is discovered in the Paris basin, containing sea shells and fresh water shells, intermingled. This might have been the direct result of the irruption of the ocean into the lake, by which the inhabitants of the sea were transported into the same spot which previously teemed with the shells of fresh water, and both entombed in a common grave.

Bones of land animals accounted for.—We are also led to infer that the land animals, whose remains are here discovered, lived and died on the borders of the same lake. Some of them appear to have been constructed for diving or swimming in the water, like the otter or musk rat.

Inference from the bones of birds.—In none of the transition or secondary strata have we discovered any vestiges of birds; nor do we detect them until we arrive at the uppermost, and most recent of the tertiary beds. Hence we infer that the feathered tribes were among the latest productions of creative energy; and, as their relics are but sparingly found, that the air was but thinly tenanted by the feathered races.

Tertiary formations in other places.—The Atlantic coast of the southern United States, is of the tertiary class. One of its distinguishing features, is the deficiency of good harbors. The western coast of France belongs to the same class. So do the shifting sands which exist in many parts of the earth, especially in the African deserts. There is also a kind of *limestone*, which is daily in the progress of formation, included in the tertiary series. Of these I will speak more fully in a future part of my investigation. In my next number, I will hasten to give a view of the *diluvial* and *alluvial* classes.

For the Advocate of Science.

System of Classification.—No. 1.

It has been found expedient, and indeed essential, in the successful cultivation of natural science, to arrange its diversified subjects into groups, according to their similarity with each other. System, or classification, thus meets us on the very threshold of scientific pursuit. Every thing in the heavens above, or in the earth beneath, even to the vapory cloud that floats in our atmosphere, has been subjected to the systematizing genius of man. Classification is the alphabet of science—the key to the temple of nature. Without some methodical arrangement, the objects around us would present themselves in a manner as irregular and confused as the houses of a crowded and populous city, constructed without streets. Let us then trace the divisions and subdivisions that have been introduced in order to give figure and symmetry to the stupendous edifice which it is our pleasure to explore.

The *animal*, *vegetable*, and *mineral* kingdoms, are three great heads, under which all natural objects are ranked—the study of which is embraced by the several terms, *zoology*, *botany*, and *mineralogy*.

The first of these, or the *animal* kingdom, comprises the almost infinite variety of living beings, from the complicated and perfectly organized lord of creation, down to the simple coral and sponge, whose title to a place in this section has not, until recently, been duly recognized. They are all arranged in several classes, which are divided and subdivided into *orders*, *genera*, *species*, and *varieties*. The system of Linnæus is generally followed by naturalists, although that proposed by Cuvier, which differs in some important respects, is doubtless preferable, and will ere long obtain precedence. But an old thing is seldom hastily relinquished, more especially if it be associated with the revered name of a father in science.

The system of Linnæus distributes animals in six classes, denominated *mammalia*, or suckling animals, *birds*, *amphibiæ*, *fishes*, *insects*, and *worms*. Let us first examine the class mammalia.

The animals of this class, distinguished principally by the suckling of their young, are arranged in several orders, the characters of which depend on the number, situation, and structure, of the teeth. Those which have four cutting teeth in each jaw, constitute the order *primates*, or *chieftains*. Our own species is at the head of this order. And here at the very entrance of our systematic plan, we have an opportunity of observing the effects necessarily attendant upon every such artificial arrangement of natural things; for among the *chieftains*, and associated with haughty man, we find that curious flying quadruped, the *bat*—resembling ourselves in one small feature, but widely differing in almost every other. The most peculiar trait in its character, is the faculty it possesses of perceiving the approach of objects, in its nightly movements—a faculty distinct from that of vision. The *vampyre* of the poets is a species found in the eastern tropics, famed for its love of blood; an appetite which it gratifies by fastening upon the veins of persons when asleep. Between man and the bat, however, although the former holds a station almost isolated, there is a sort of gradation, through the various tribes of apes, baboons, and monkeys; one of the latter family, the *flying lemur*, being furnished with a membrane similar to that of the bat, by means of which he can fly from tree to tree.

The second order of the class *mammalia*, includes all those animals that have no front teeth in either jaw. This order, denominated *bruta*, or *brutes*, comprises, among others, the elephant, the rhinoceros, the *lamantin*, or dolphin of the ancient poets, celebrated by them for its love of music, the scarcely locomotive sloth, and the duck-bill of Australasia. The latter animal has the feet of a quadruped, and the bill of a waterfowl, and is, moreover, related to the amphibious order, by its fondness for water.

The third order of this class is named *feræ* or *savages*. They all have front teeth in each jaw, varying in number from two to ten, beside a solitary tusk. Here is arranged the useful *seal*, capable of shedding tears, when in distress, a trait formerly supposed peculiar to the human species—the canine genus, including the intelligent and faithful dog, the protector of man, and the prowling hyena, whose savage appetite leads him to exhumate the bodies of the dead—the *feline* family, containing the cat, the tiger, and the lion, possessing the peculiarity of falling always on their feet, and with eyes adapted to their predatory habits, which see best with little light—the clumsy but ferocious bear—the otter, ermine, and some other animals valuable for the production of fur—the mole who delights in geology—and the hedge-hog, who is tamed by the Tartars, for the sake of his services as a practical entomologist.

The animals of the fourth order, called Glires, or *hybernators*, are distinguished by two fore teeth in each jaw, remote from the others. They burrow in the earth, and mostly sleep through the winter. The beaver, whose brain is one enormous organ of constructiveness, and the rat, mouse, squirrel and rabbit, are examples of this order.

The *pecora*, or *cattle*, forming the fifth order, are without front teeth in the upper jaw, and have six, seven, or eight in the lower. They have four stomachs, parted hoofs, and are provided either with tusks or horns. To this division belong our very useful ruminating animals. The digestive canal of some of these, especially of the antelope, is very liable, from its torpid nature, to form concretions of food, mingled with hair, sometimes so hard as to bear a fine

polish; and when in this state, they constitute the bezoards, formerly in so high repute as amulets.

The *belluæ*, or *warlike* animals, compose the sixth order. They have front teeth in both jaws, and are hoofed. Here are found the noble, the spirited, and the useful horse—the hippopotamus, supposed to have first suggested to man the idea of bloodletting, by performing it upon himself—and the swine family, of which the common hog is a civilized member.

The seventh and last order of this important class, is the *cete* or *whale* family, containing the sea unicorn, the whale, the porpoise and the grampus, the latter of which will sometimes attack and conquer a whale of twice its size. The cetaceous animals have little exterior resemblance to the other orders of the class mammalia, appearing more nearly allied to fishes. But their internal anatomical structure, and their mode of nourishing their young, connect them with quadrupeds.

Cuvier's arrangement of the class mammalia, is founded on characters taken from the structure of the feet, and is certainly a more natural mode of classification than that of Linnæus, which depends, as we have seen, on the teeth. The groupes of the French naturalist do not contain such anomalous associations as of man with the bat, of the cat with the seal, or of the mouse with the porcupine. But the advantages of the system of Cuvier, have not yet been able to overcome the force of the authority of Linnæus, and the aversion to change in the human mind. ARANEA.

For the Advocate of Science.

AMERICAN SCIENCE AND LITERATURE.—No. 4.

Inherent with man, is the inclination to labor in those fields where popularity has elevated her standard, and too often without a wise consideration of the utility of their design. Where public attention is once directed with a plausible object, multitudes flock together, emulous of supporting it with hand and heart. For there are those in the world, who largely trust to others' judgment, because they will not think for themselves, nor take advantage of their own past experience, which of itself would teach them without the aid of thought. These, we find, are rarely elevated above the common standard, and never obtain a distinctive character among their race, save it be one for some great gift of art, which nature may have been instrumental in gaining for them, such as the enviable faculty of causing the heels to revolve about the head with graceful precision, the head to take the place of the heels with dignified composure, and the limbs to be distorted in such a manner that a sober minded citizen would be led to question whether the object before him was human or otherwise; or for the still more enviable, but not superior honor of being the proprietor of a celebrated racer, on whose fleet and gigantic strides depend more than the persecuted brute is himself aware of. I speak not in an ironic style, when I call these enviable accomplishments and enviable honors; for such they are with the populace, impossible as it is to reconcile the doctrine to reason.

In the largest city of the United States has this giddy love extended so far, that notwithstanding a few of her enterprising and worthy citizens, by virtue of a zeal which will ever reflect great honor on their characters, succeeded in establishing at different periods no less than four associations, devoted each to literature, philosophy, history and science, yet nevertheless did they all receive ignoble treatment, not from her citizens alone, in a private capacity, but by the very authorities whose duty and whose interest it was, to protect and foster them. Three of these, which had succeeded in obtaining rich and valuable collections in natural history, books and paintings, were unceremoniously expelled by the corporation from the rooms they occupied. And as rich as Philadelphia is in resources, and immense as the capital lying idle within her limits, as famed for liberality of spirit, and for being the emporium of the literature, the arts, and sciences of America, yet it is an undeniable fact that none of her citizens, however great may have been their reputed love for the advancement of such an important and useful concern, have ever given or bequeathed a sum of money to the only strictly scientific institution within her walls,—the Academy of Sciences.

Thousands of dollars are continually being lavished on theatres, and thousands on horse races; thousands are spent in electioneering purposes, to satisfy the ambitious demands of one individual over another, and thousands on parades, and processions, and dinners; thousands bestowed on objects of false philanthropy, and millions to gratify the sensual appetites of men.

But where do we hear of the stores of wealth being opened for the all important purpose of supporting the advancement of human knowledge? Where do we hear of splendid donations being made to scientific institutions, and flattering and laudatory notice taken of their unceasing but modest toil? We may look round for such propitious tokens of a people's wisdom, but where a solitary example will be found, ten fold the number can be discovered of praises, and admirations, and benefits, being profusely heaped on theatre players, and horse racers, and even on lottery offices and gamblers!

Admirable taste of a republican people, that will permit such things spontaneously to grow on their soil, to the exclusion of useful and virtuous science! How much might the mind of that man be enriched, who would contribute to his intellect what in one night is joyfully given in the course of theatrical and lascivious dissipation! What comfort and happiness would such a practice render him in an enfeebled age, by filling up the great void which must necessarily exist as a consequent of the past, if he should happen to survive the shock of an intemperate youth!

Yet there are thousands of these who would think themselves on the verge of ruin, were one-tenth of what they voluntarily give on such occasions demanded for a useful purpose! Thousands whose noblest faculties are sacrificed to the very meanest propensities of nature, and who purchase an infamous character with their fortunes, while they might have easily gained a virtuous and a far more lasting fame! And thousands too, there are, who, exhibiting an utter listlessness of almost every duty, whether social or sacred, permit the vigor of youth to pass away with no other earthly employment than that of visiting their tailors from day to day, and showing their accurate proportions and exquisite manners in places of public resort. And not in youth alone, but the prime of their manhood shows little or no practical reformation in their characters, since even then their amusements are

"A little larger, [but] as trifling quite."

The philosopher Cato, on his death-bed, mourned because he had passed a single day unappropriated to activity of mind or body. This was heathen philosophy and heathen doctrine. How many at the present advanced state of the world, at the moment of a waning existence have to regret, that not only a single day have they passed, but a whole lifetime, in a species of toil which is at best doubtful, and which receives not the gift of approving conscience.

W.

Number of species of Birds.—Buffon complained of the difficulty of writing a history of birds, because he already knew of 800 species, and supposed there might actually exist 1500 or even 2000. What would be his embarrassment now when nearly 6000 species are known, and fresh discoveries are daily augmenting their number.—*Wilson's Ornithology.*

THE ADVOCATE OF SCIENCE.

Sixth Month 20th, 1833.

Erratum.—In an article of the miscellanies, in our last number, magnesia is stated to have been found in vegetables, *instead of the metal manganese.*

Sickness has prevented the regular appearance of this number of our paper

To Correspondents.

We hope "Juvenis" will continue to defend his theory, though we think "Boreas" will find him thinly clad. Whether the theory we presented in our last number be maintainable or not, our latter correspondent has certainly blown away the other one, like smoke.

"Barbara" shall hear from us again in the next number. She need not be afraid of incommoding us. Perhaps some of our young readers will save us the task, and exercise their own ingenuity by replying to her inquiries.

The Dialogue is necessarily omitted in this number.

We have ascertained that several of our subscribers have not received our paper, by the mail, with regularity. No blame can attach to us on this account; for the numbers have been regularly deposited in the post office in this city. However, if those who have not been supplied will inform us, or our agents, what numbers are missing, we shall make one more attempt to supply them.

A writer of some ability, the editor of a western paper, thus describes a young Indian, the eldest son of the famous chief, Black Hawk. "He appeared to be the very model of him described by the Poet, as one on whom

'Each god had set his seal
To give the world assurance of a man.'

Had there not been wanting in his countenance that peculiar expression which emanates from a cultivated intellect, and which education alone can give, we could have looked upon him as the living personification of our *beau ideal* of manly beauty and perfection. As it was, we could not but admire him as a noble of nature, while we lamented that so superb a temple enshrined a soul on which the light of science had never dawned."

And again, speaking of the group, "We have never seen a more noble looking set of men, and we have never met, in the drawing room or in the saloon, with more dignity of carriage and manner, and more native grace and politeness, than we beheld in these Indian captives. When we looked upon them we could not but imagine that such as these must have been the men who composed 'the commonwealth of kings, the men of Rome.'"

These are the men, or the animals, with whom many white men who make a boast of their scientific attainments, disdain to be associated as descendants of the same stock! One of the main arguments advanced to maintain a difference of species, is the difference of organization. The American or Indian race is considered by the philosophists in question, to exhibit, stamped on their features and form, the marks of an inferior race of beings, separated by an impassable barrier from the perfected organization, and exalted character of the white man!

EMBALMING.

In the fifth and sixth numbers of our paper, we published a history of the art of embalming, as practised among the Egyptians and other ancient nations. Since that time we have had an opportunity of examining the account of Herodotus, who enters into a full detail of all the circumstances connected with the practice. His history does not vary materially from that we gave, but nevertheless we make a few extracts from it, which will give some additional information. In speaking of the practice of medicine among the Egyptians, he observes:—

"One physician is confined to the study and management of one disease; there are of course a great number who practice this art; some attend to the disorders of the eyes, others to those of the head; some take care of the teeth, others are conversant with all the diseases of the bowels; whilst many attend to the cure of maladies which are less conspicuous.

"With respect to their funerals and ceremonies of mourning: whenever a man of any importance dies, the females of his family, disfiguring their heads and faces with dirt, leave the corpse in the house, and run publicly about, accompanied by their female relations, with their garments in disorder, their breasts exposed, and beating themselves severely; the men on their parts do the same. After which the body is carried to the embalmers.

"There are certain persons legally appointed to the exercise of this profession. When a dead body is brought them, they exhibit to the friends of the deceased different models highly finished in wood. The most perfect of these resembles one whom I do not think it religious to name in such a matter; the second is of less price and inferior in point of execution; another is still more mean; they then inquire after which model the deceased shall be represented; when the price is determined, the relations retire, and the embalmers thus proceed:"

Their operations after this are similar to what we have described. The wives of men of rank, and those females who have been distinguished for their beauty and importance, are not delivered to the embalmers immediately after their decease; but are kept three or four days, in order to prevent any indecencies being offered to their persons.

"If an Egyptian or foreigner be found, either destroyed by a crocodile, or drowned in the water, the city nearest which the body is discovered, is obliged to embalm and pay it every respectful attention, and afterwards deposit it in some consecrated place; no friend or relation is suffered to interfere; the whole process is conducted by the priests of the Nile, who bury it themselves, with a respect to which a lifeless corpse would hardly seem entitled."

From the notes connected with this account, we learn the Jews embalmed their dead, but contented themselves with an external unction, instead of taking out the intestines. A modern Jew has made an objection to the history of the New Testament, that the quantity of spices used by Joseph and Nicodemus on the body of Christ, was enough for 200 dead bodies. Diodorus Siculus mentions that the relations of the deceased used neither baths, wine, delicate food, nor fine clothes, till the body was buried. It is said the Romans understood the art of embalming better than the Egyptians. There were two species of cotton grew in Egypt—an annual and perennial one. The latter it was which they cultivated and used as envelopes for their mummies, and not linen, as is generally believed.

The Persians inclosed the bodies of their dead in wax, previous to their burying them. Bodies which were thus inclosed continued perfect for ages. The body of Edward I, was enveloped in wax; and some gentlemen of the Society of Antiquaries being desirous of seeing how well this method answered the purpose, obtained permission to examine it. It was found entire, May 2d, 1774. The body must have been preserved three and a half centuries, in the state in which it was then found. Writs were issued by Edward III. and Henry IV. to the treasury, from time to time, to renew the wax about it.

The largest collection of mummies which was ever in this country, was being exhibited at the Arcade a few weeks since. They were eight in number, and were obtained from the hills,

of Thebes. One of them possessed a strikingly beautiful and perfect cranium: he was evidently a person of distinction judging from the large scroll of papyrus which was found in a state of complete preservation within his coffin. Independent of this, a phrenologist at first sight would not hesitate to pronounce his to have been a signal career, whose antiquated form did not seem unworthy the spirit of a Washington, or the eloquent soul of a Webster. He was purchased by Dr. Horner, and deposited in the University of Pennsylvania. For the papyrus alone the proprietor demanded 500 dollars. But as our country can boast of no Champollion, we doubt if he will find a purchaser at that price.

Dr. S. G. Morton, in directing the attention of the members of the Academy of Sciences to this collection, said he observed on the cheeks of several, a fine white powder. The taste of this corresponded with that of nitre. On entering the room where they were kept, he detected an odor, which for some time he had in vain attempted to recognize, as being similar to a chemical preparation of modern times. At last he discovered it to be that of pyroligneous acid. The proprietor informed him this odor was so strong in the morning, when he first opened the windows, that he had to withdraw from the room till it was ventilated. From hence he infers that this substance was used in their preparation. He also remarked a curious circumstance which had been ascertained, respecting the disposition of the arms of the deceased. Those of the men were crossed over the waist; the married women's hung down at full length with their hands meeting before; while those of the unmarried females were placed along the side.

We observed a species of deception which had been practised by the embalmers, for the purpose of giving to the body its natural shape; for the better the symmetry of the different parts was preserved, the greater credit did it reflect on the artist. A leg was shown, of which the muscular part of the calf was entirely composed of bandages, and found so natural, that no one could tell from an external examination that any artificial measures had been resorted to. We suspect this plan of creating *new* muscles was carried to some extent; and there is no question that it answered every purpose.

The papyrus or byblus, on which the ancients wrote their books, was a rush, growing to the height of eight or nine feet. It is supposed to be very scarce at the present time. It was not till after the building of Alexandria, its use was discovered. They wrote on the inner skins of the stalk, and the plant was applied to various uses. The stalks were made use of as an article of food; and some, to render it more delicate, roasted it previous to eating.

To the Editor of the Advocate of Science.

Sir: In looking over one of your late papers, I observed you called the fly a *useful* and *interesting* little animal. This is about the strangest character I ever heard given to this pestiferous race of insects; and you will oblige me much by expounding to my comprehension any good that they have ever been guilty of, as well as showing what there is so mighty interesting about them. Methinks if you had as much to do in the cooking line as I, you would pretty soon make your creed one of convenience, and put your wits to work for the purpose of finding out some way of totally annihilating them, instead of telling your readers how many miles they can fly in an hour, and the like. Yours, respectfully, FLYKILLER.

Before we proceed to comply with the wishes of our correspondent, whose organ of destructiveness, we opine, is pretty largely developed for one of the sex, we must remind her how great is the loss both of pleasure and instruction, which results from unworthy prejudices, against the productions of nature. It has often appeared very strange to us, how some will squeel at the sight of a spider or roach, some faint when they happen to see a little mouse, and others go half way into fits if they accidentally get a view of a snake or lizard. Yet all the world over there is nothing more harmless and inoffensive than these said animals. It is true, there are a few snakes whose bite is something worse than that of a flea; but they never pierce their poisonous fangs into any body without giving due notice of their intention. We would not advise inexperienced persons, however, to handle these with impunity, lest they might suffer for their rashness; yet at the same time we can assure the timid, there are very few in our degree of latitude, which they have any reason to fear.

It is useless to give a description of the fly. It is one of the most extensive families of insects there is. Gmelin describes 550 species, which are not one half the whole number. The most particular use the common fly serves to man, is, to purify the air he breathes. The quantity of decomposed vegetable and animal matter they consume in our streets and houses, is altogether incalculable. And we will leave the question for the decision of our correspondent, to say how much less we suffer from sickness and disease, than if these important sanitory agents were not at work from morn till night in an occupation no less indispensible for our health and comfort, than for their own existence.

The vast number of flies which so suddenly appear in our houses, has led some to the belief that they are a migratory insect. But this is not the case. The common fly enjoys but a short existence, and the egg the parent deposits in the fall, in dung-hills and other places favorable for their preservation, and ultimate incubation, are almost simultaneously hatched, as we may very naturally suppose. We could certainly never accuse chickens of emigrating, because in the space of a single week, we may see 500 or a 1000 hatched on a farm. And for the same reason we cannot allow that flies are migratory insects; and we are the more confirmed in the opinion, when we consider the period of their lifetime is but four or five months. Thus we see about the middle of July or beginning of August, large numbers of dead flies lying about in almost every direction. This circumstance gave origin to the report so prevalent last summer, that the very flies were dying off by thousands, under a visitation from the cholera. But the real state of the case was, that those who made this curious discovery, prompted by a laudable curiosity to observe the effects of a vitiated atmosphere on other animals beside men, saw how the first generation of flies vomited and gave up the ghost in their old age, and imputed it to the cholera, instead of that law of nature which assigns to every animal its restricted period of existence. As to vomiting, it is an optional exercise with them. About the same time this first generation is thus passing away, a second one is being produced, which is doomed to a similar fate, after depositing its eggs to be hatched the succeeding spring. Hence for a want of a little careful observation, has an erroneous idea been promulgated and received by almost every one.

What may have contributed to a more sudden exanimation of these insects during last summer, was the comparatively small quantity of vegetable matter brought into the market, and permitted to lie about the streets; for in a great measure must their dependence for food be here. If it fails them, the effect is easily to be seen.

The common fly lays about 140 eggs at a time. An eminent naturalist has said, that if the eggs of three of our common blow flies (Musca carnivora) be permitted to hatch in the body of a dead horse where they are deposited, they would eat up the carcase in the space of three or four hours. But all flies are not oviparous. There is a viviparous species, one of which was ascertained to contain 20,000 young ones! From this also we may argue that a sudden appearance of many flies is

no proof that they were not generated in the immediate neighborhood. It is necessary the progeny of these and some other animals must be very numerous, in order to permit some of them to escape the many enemies they have to encounter.

We would like to say more on this subject, but we are forced here to conclude. Perhaps at a future time we may take the opportunity.

To the Editor of the Advocate of Science.

Your ingenious correspondent "Juvenis," has defended the view that the hazy condition of the air which frequently takes place, is owing to the smoke emitted by burning vegetable substances. Some of his assertions led me to investigate the relation of that phenomenon to the weather &c. If you think the result worthy of so much notice, I should be pleased to occupy a short space in your paper.

Juvenis asserts that "we never have this haze, except when the barometer stands very low"—and that "a rise in the barometer disperses it." In order to ascertain the truth of this remark, I have made out a table of the state of the barometer during the existence of hazy weather, and for a few days before and after; so as to observe what changes the pressure of the atmosphere undergoes to induce the phenomenon, and dissipate it. I think the result will make your friend Juvenis open his eyes, for it is precisely contrary to his doctrine.

The table alluded to commences with April, 1832 and ends with May 1833. It embraces six distinct hazy *spells*, of from four to seven days each, as follows: 1832, beginning April 10th, 5 days, October 30th, 5 days, November 10th, 7 days; 1833, March 30th, 4 days, April 19th, 5 days, April 28th, 5 days. When only one or two hazy days have occurred, no notice is taken of them. The average height of the barometer on those 31 days was 29.895 inches, and the average height during the months in which they occurred was only 29.84 inches!—Showing that the air was considerably heavier during the hazy weather than its mean weight. In fact, it mostly happened that as soon as the barometer fell considerably, the haze disappeared; and there was also nearly always a fall in that instrument after the disappearance of the haze.

The direction of the wind which accompanied the accession of the haze was as follows: 1832, April, S. W.—October, N. W.—November, W.—1833, March, W.—April, S. W.—April again, S. W. The wind which accompanied its dispersion was as follows: 1832, April, N. and N. E.—October, W.—November, N. E.—1833, March, S. E.—April, N. and N. E.—April, again, E. The prevailing wind during the haze was S. W. and W. The weather was mostly clear, and not a drop of rain fell. The length of time without rain previous to the coming on of the hazy weather was respectively 7, 8, 4, 9, 2 and 3 days. But in three of the six periods, it rained the very next day, and in the other three, the second day afterwards.

The thermometer averaged higher on the 31 hazy days, by two degrees, than in the corresponding months. But this difference was in great part owing to the absence of cloudy weather. Every body knows, however, that hazy weather is nearly always warm.

Hence it follows that hazy weather is attendant on some peculiar state of the atmosphere, and not dependant on local causes. Were it produced by fires in the woods, &c., we should see the advance of the smoke from one side of the heavens to the other. Instead of this, however, it comes on gradually in the whole circuit of the horizon at once. The air is remarkably clear of clouds, the haze appearing to act as a substitute. Often, especially in Spring, it appears to change gradually into clouds, and rain follows, when the haze is dissipated completely in a few hours; sometimes it returns again in a few hours, very dense. The weather must be calm or nearly so, and dry, in order to form it. The atmosphere must be rather heavier than its common weight. If the pressure of the atmosphere decreases, a cause which might be supposed necessary to its production, it dissipates. A high wind from any quarter, even directly from the quarter in which the praries and woods are on fire, disperses it.

Juvenis finds some difficulty in producing smoke from the exhalations of vegetables. These consist of carbon, hydrogen and water; the air being composed of oxygen and nitrogen. Now smoke consists essentially of pyroligneous acid, which contains nothing extraneous to these elements. Although Juvenis could not produce the carbonization of vegetable effluvia by any means in his power, it seems to me quite probable that the effluvia of vegetation floating in the air are quite sufficient as materials, to form good smoke, in consequence of some of those processes which are constantly going on in the "great laboratory of nature." At any rate I would sooner undertake to make smoke out of oxygen, nitrogen, carbon and water, than to make meteoric stones out of the same ingredients—which is the most approved theory of their origin.

I did not intend to intrude on your columns by furnishing a defence of your theory. That, I leave for yourself, except so far as the facts which I have presented will apply to the subject.

BOREAS.

Answers to the questions of "Barbara," published in Nos. 9 and 10.

"1. In looking over your table of the weather, I observe the wind very often northerly in the morning, and inclining southerly in the afternoon. Why is it so?"

The primary cause of wind is the rarefaction and ascension of the atmosphere in any part, causing the surrounding air to flow in to restore the equilibrium. This rarefaction is produced by heat. Heated air is known by every one to ascend. In a room containing a fire, if a candle be held at the bottom of the door, the cold dense air from the outside is found rushing in. But if the candle be held to the top of the door, the warm rarefied air of the room is found to be rushing out.

To apply this principle on a large scale, we perceive the sun acting during the day on the land, and warming the superincumbent body of air more than that over the ocean; the water absorbing the heat of the sun. Consequently the air of the land becomes more rare and more light than that of the sea, and ascends precisely like the warm air of the room, while the cold air of the sea flows in to supply its place. A sea breeze is then produced. As soon as the sun sets the heating process ceases on the land, while the water parts rapidly with its warmth, and soon renders the air of the sea warmer than the chilled atmosphere of the land. The former consequently rises, and the latter flows in to supply its place, thus constituting the nocturnal land breeze.

"2. Why does your table exhibit stronger winds in the middle of the day than in the morning and evening?"

To this question the same principles are applicable. The power of the sun is strongest in the middle of the day, and of course the disturbance of the atmospherical equilibrium is greatest at that time. And as the wind depends on this disturbance, it is strongest at the same time.

"3. Why does the wind almost always change to the north-west when the barometer has fallen very low?"

A low state of the barometer indicates a rarefied or light atmosphere, which must be followed by a current of air, or a wind, setting in from that quarter in which the air is most dense or heavy. Now mountainous districts give rise to the latter state of air; and hence, whenever the air in the vicinity of a mountain becomes rarefied, the dense air of the mountain pours down like water into the plain. The Alleghany and Rocky Mountains, west and north-west of us influence our winds in this manner, and produce the north-west winds referred to. For the same reason thunder-gusts

proceed from the same quarter, and are very apt to occur when the barometer falls very low; that is, when the air becomes considerably rarefied. The barometer thus becomes a very good indication of a high wind or of a thunder-storm. Whenever it is very low, as our tables will show, a high wind follows, as a general rule.

"4. Why does a northwest wind nearly always raise the barometer, and a southerly wind sink it?"

This question is already answered. The former wind brings the dense air from the mountains, whilst the south wind brings the warm light air from the tropical regions.

"5. Why does it snow sometimes when the thermometer is above freezing, and at other times rain when the mercury is below freezing?"

The temperature of the air on the surface is not always the same as that of the air a little above; it is sometimes warmer and sometimes colder. Often in the winter while that on the surface is very cold, a southerly current above has warmed the upper regions. The stratum resting on the earth's surface is therefore not a deep one—perhaps very shallow. In this case the water falling from the clouds reaches the earth before it has time to be frozen in the shallow stratum through which it has to pass. If this stratum be deep enough, the rain is frozen in drops, and falls in the form of hail. If the cold stratum is still deeper, so as to reach up to the clouds, snow is formed; for, in order to form snow, the particles of water must be frozen while they are very small.

If, on the other hand, the air on the surface of the earth be warm, and that a little distance above be cold, then the frozen water, whether it be snow or hail, reaches the ground in the same shape as it acquired in passing through the freezing stratum; provided nevertheless that the lower stratum is not deep enough or warm enough to dissolve the snow or hail while traversing it. In that case it changes to rain.

We have often seen it snow when the thermometer was above 40°, and even 50°; and we have seen it rain at a temperature of 24°. In both cases the lower stratum must have been very shallow; had it been deep it would have melted the falling snow in the one case, and frozen the falling rain in the other.

To the Editor of the Advocate of Science.

I send you a few more questions on the subject of the weather, though I do not wish to incommode you by my curiosity.

1. Why does a cloud in the west precede a storm from the east?
2. Why do our snow storms from the north-east, begin first in the south and advance northward against the wind? or is it correct that they do?
3. Why is a *clear-off* in the night less permanent than when it clears off in the day?
4. Why does it continue clear for a longer time when the wind goes round by the south, than when it goes round by the north?
5. Why are the indications furnished by a rainbow in the morning, so opposite to those of a rainbow in the evening? According to the old proverb,

"A rainbow in the morning
Is the sailor's warning;
A rainbow at night
Is the sailor's delight."

6. Why does a clear sunset portend a fair morning?

BARBARA.

MISCELLANIES.

1. *Eating monkeys conducive to cannibalism.*—The 44th No. of Harpers' Family Library contains an account of the travels and researches of the justly celebrated Humboldt. In a description of a festival of the Orinoco Indians, it is stated that large roasted monkeys blackened by smoke, were ranged against the wall. Apes when thus cooked, especially such as have a very round head, bear a hideous likeness to human children; and for this reason, such Europeans as are obliged to feed upon them separate the head and hands before the dish is presented at their tables. The flesh is very lean and dry. Humboldt supposes, and no doubt correctly, that the habit of eating animals so much resembling man, has in some degree contributed to diminish the horror of anthropophagy among savages. Such habits doubtless have a strong influence. There is probably not any very strong natural aversion to eating human flesh. Many persons would almost as soon partake of it as to feed on cats and dogs; and yet the Chinese are habituated to eating these animals.

2. *Silex in Vegetables.*—We lately gave the names of several vegetables which contain gold, silver &c. in small quantities. Nearly every mineral substance is thus found in some plant or another. Silex, or the same earth which composes glass, quartz, and flint, is met with in a considerable quantity, especially in the cuticle, or outside layer of the bark. It is so abundant in wheat straw, that the ashes of this plant may be melted into a colorless glass by the heat of a blowpipe. By the same means barley straw yields a glass of a topaz yellow color. The bamboo contains a large quantity, and it is so copious in the skin of a plant, *(*Lithospermum *arvense, or field Gromwell)* common in our grass fields, as to dull the scythes of the mowers. There is a species of fern *(Equisetum)* which retains its form after being burnt, owing to the quantity of silex in its composition.

3. *Leaves of trees for food.*—Nearly every source that can supply eatable substances has been resorted to for food in time of scarcity. The Laplanders when pressed, make bread from one of their mosses. A scientific French journal states, that in France, in 1817, the continued rains of the preceding summer having prevented the corn from ripening in one of the departments, the people for several weeks before the next harvest were reduced to live solely on herbaceous vegetables, as goat's bread, wild sorrel, nettles, thistles, bean tops, and leaves of trees. These were chopped up, boiled and mashed; if too old to be so eaten, the juice or pulp was expressed from them. This fact will not be so surprising to us when we reflect how many vegetables are eaten by ourselves, after simply boiling them; such as docks, dandelion, shepherd's purse, &c. The tender shoots of the Virginia thorn are boiled and eaten as *greens* by some persons.

4. *Opposite habits of plants of the same genus.*—It frequently happens that different species of the same genus of plants have habits precisely opposite to each other. Thus one kind of oak will thrive only in a dry sandy soil, another only in swamps, and a third only in rocky places. A species of grass of the genus Festuca is common in all soils, another grows only where it can imbibe the salt of the sea air, and a third only on calcareous or chalky ground. There are two species of *Cypripedium* indigenous to this vicinity, one of which, the yellow moccasin flower, or Noah's ark, is found exclusively in dry rocky situations, while the other, the purple moccasin flower, lives only in damp alluvial soil. Not unfrequently, plants of these opposite habits have a striking similarity to each other, so as to require close examination in order to detect the difference of their species.

5. *Origin of pin money.*—In the reign of Henry VIII. pins were regarded as a luxury, and it was the custom of men to give their wives an allowance of money for their own spending. The term pin money originated in this way. In those days, however, pins were made of bone, ivory, box &c. It was not until 1543, fifty years afterwards, that the art of making them from brass wire was known. During the war of the American revolution, when the importation of foreign merchandize into the states was prevented, thorns were in common use as a substitute. And many persons can now remember to have seen the lady of those days habited in a dress which was fastened together with thorns!

6. *Rosewood.*—This handsome and much esteemed wood is supposed by many clever young people, who are well versed in the biography of Ivanhoe, the young Duke, and Asmodeus, to be the wood of our common rose bushes, or of some larger kind of rose tree! Perhaps some of the latest novels, of the improved style, furnish a more correct statement. However, it is known by naturalists to be the wood of the Amyris *balsamifera*, an elegant and odoriferous tree of Jamaica.

7. *Ingenious expedient of a Fish.*—A person in Cornwall once saw a seal in pursuit of a mullet. The fish turned to and fro in deep water, as a hare chased by a grey hound, till in order more speedily to escape, it glided into shoal water. The seal pursued; but the mullet, to get more surely out of danger, threw itself on its side, and by that means darted through shallower water than it could have swam in, had it not assumed its new posture. In this way it escaped.—*Turner's Hist. of the World.*

8. *A hen with a human face.*—Nature often presents us with strange variations from her accustomed articles of workmanship

In 1802 a hen was exhibited in Poland, with a head having an obscure resemblance to the human face. It is thus described by Cuvier, whose authority none will doubt: "I have myself seen this animal alive and in excellent health. It had attained its full size, for it was more than a year old. In its body it resembled other hens in every respect except the head. This was of the usual size, without feathers, and covered with a bluish skin. The cavities of the eyes were completely formed like those of the human eyes. They were surmounted by two small arches of down, which formed very regular eyebrows. The upper part of the bill was shorter than usual. It had but one blunted point, and the nostrils were underneath it; so that, although it was horn, it presented a perfect resemblance to a very well made nose. Below this nose was a very regular mouth, with lips, two rows of very white teeth, close and pointed, and a round tongue. This resemblance to a human countenance had something in it even horrid; but it was perfect, and had no need of the assistance of the imagination to be recognized."

JOURNAL OF THE WEATHER,

for 5th Month, May, 1833, kept at Wilmington, Del.

Days Month.	THER'M. Sunrise.	THER'M. Mid-day.	THER'M. 11 P. M.	BAROMETER. Sunrise.	BAROMETER. 11 P. M.	BAROMETER. Mid-day.	WIND. Morning.	Force.	Aft'noon.	Force.	Evening.	Force.	OBSERVATIONS.
1	54	60	55	30.00	30.05	30.04	E	3	E	2	ESE	1	Partly clr. hazy.
2	52	77	66	.02	29.84	29.87	SE	1	SW	1	NNE	3	Cloudy, clr. hazy.
3	52	64	59	.03	30.05	30.05	E	2	SSE	1	S	1	Clear.
4	44	54	51	.07	.10	.07	S	2	SSE	2	SSE	1	Cloudy, r. .20 in.
5	52	62	56	.08	.03	.00	SW	1	E	2	SE	1	Cloudy, clr. hazy.
6	52	69	56	29.99	29.97	29.96	S	1	SW	2	SW	1	Cloudy, clr. hazy.
7	54	78	68	.95	.91	.87	SW	2	SW	3	W	1	Clear, L. in hori.
8	62	80	66	.87	.83	.79	SW	2	W	2	W	1	Clr. gusty, T. a L.
9	60	76	58	.83	.85	.51	NE	2	NE	2	E	3	Clear.
10	53	62	53	.98	.97	.91	E	2	E	3	E	2	Cloudy, rain.
11	58	68	63	.88	.87	.85	S	2	SSW	2	S	2	Rain, partly clear
12	62	70	65	.84	.82	.82	SSW	2	SSW	3	S	2	Cloudy, showers.
13	64	73	69	.84	.83	.85	S	2	S	3	S	2	Cloudy, showers.
14	67	75	68	.87	.88	.90	SSW	2	SSW	3	S	2	Cloudy, showers
15	67	69	66	.91	.93	.96	SW	2	NE	2	NE	2	Do. do. 2.75 in.*
16	65	63	58	.97	.93	.90	NE	3	NE	3	NE	2	Rain 0.40 inch.
17	60	74	67	.88	.87	.87	S	1	SW	1	SW	1	Partly clr. L. aur.
18	65	79	72	.85	.80	.80	SW	1	SW	1	W	0	Cloudy, clr L.
19	69	81	72	.79	.77	.76	WNW	2	WNW	1	NW	0	Clr. cldy. .10 r. L.
20	69	79	64	.77	.76	.70	E	2	SE	3	E	3	Rain, T. and L.
21	66	76	63	.60	.56	.59	SW	2	SW	2	WNW	1	R. T. a L. 1.25 in.
22	59	74	65	.74	.81	.89	NW	2	NW	2	NW	1	Clear.
23	64	70	62	.96	.97	.97	E	2	E	2	E	1	Rn. T a L. .30 in.
24	57	68	57	.95	.93	.90	ENE	3	ENE	3	ENE	2	Cloudy.
25	54	60	57	.88	.84	.78	ENE	3	ENE	3	ENE	2	Rain, .20 in. L.
26	54	72	67	.75	.75	.74	NW	2	WNW	2	W	1	Cloudy, clear.
27	63	75	60	.74	.74	.75	E	2	E	3	E	2	Rain, T. and L.
28	57	66	64	.77	.77	.79	SE	2	SE	2	SE	1	Rain, 2 inches.
29	62	68	59	.80	.80	.79	SSE	2	SW	1	NW	3	Rn. in. T. a L. 60.
30	54	66	55	.83	.82	.84	NW	2	NW	2	NW	1	Clear.
31	55	72	62	.85	.85	.87	SW	1	S	1	W	1	Clear.

Note.—In the column representing the "Force" of the wind, 0 denotes calm, or nearly so, 1 a light breeze, 2 a breeze, 3 a wind, 4 a high wind, and 5 a very high wind. The letters R, T and L denote rain, thunder and lightning respectively.

* This is the quantity of rain since the 10th. In two other cases the quantity set down in the table refers to more than one day.

SUMMARY.

Average at sunrise, thermometer 58°.58—barometer 29.88 inches,

Do.	at mid-day,	do.	67°.81	do.	29.87 do.
Do.	at 11 P. M.	do.	61°.74	do.	29.865 do.
Monthly mean, (2 obs.)		do.	63°.195	do.	29.875 do.
Maximum, (19th,)		do.	81°	do. 4th	30.10 do.
Minimum, (4th)		do.	44°	do. 21st	29.56 do.
Range,		do.	37°	do.	.54 do.
Warmest day, 19th,		do.	75°		
Coldest day, 4th,		do.	49.°		

Northerly Winds prevailed, (proportion,)	5 days	Proportion of cloudy weather,	17 days.
Easterly, do.	13 do.	Whole days clear,	7 do.
Southerly, do. (S. to W.)	13 do.	Days on which rain fell,	16 do.
Proportion of clear weather,	14 do.	Quantity of rain,	7.80 in

Observations.—An aurora borealis, exceedingly brilliant, on the 17th, followed in three days by an easterly storm, and in a week by another, with a continuation of easterly winds. Clouds electrified on 11 days, though not to a great degree. Not a single complete thundergust. Easterly storms, five in number, all complete, and attended with rain. A very rainy month, although not an excessive quantity of rain fell. On the 22 days ending with the 9th of May, there were only two days on which rain fell; but on the 22 days succeeding, there were only 7 days on which it did not rain. Temperature of the month much higher than usual. No frost. Thermometer only once below 50°. Winds moderate and variable, though constantly disposed to settle in the south and east.

From Magellan's Voyage, in 1520, *to South America.*

"One day, while at Port St. Julian, an Indian, well made, and of gigantic size, came capering and singing to the beach, throwing dust upon his head in token of amity. A Spanish seaman was sent on shore, and directed to imitate the gestures of the savage, who was of such immense stature that a middle sized Castilian only reached to his waist. He was large in proportion, and altogether a formidable apparition, his body being painted all over, his broad face stained red, save a yellow circle about his eyes. A couple of stags horns adorned each cheek. His favourite colour seemed to be yellow, which has a good effect upon a dark ground. His hair was covered with a white powder. His clothing formed of the skins of the guanaco, covered his body from head to foot, wrapping round the arms and legs; and was sewed together all in one piece, like the dress of the ancient Irish. Shoes made of the skins of the same animal, which made the feet of the Indians appear round and large, procured for these tribes the name of Pata-gones, or *clumsy hoofed*, the origin of the term Patagonians. The arms of the Patagonian were a stout bow and arrow—the former strung with gut, the latter tipped with flint stone sharpened. The voice of this man was like that of a bull. He went aboard the ship of the captain general, where he appeared quite at his ease, ate, drank, and made merry, till seeing his own image in a large looking glass, he started back in alarm, and threw down four Spaniards. The good reception of the first giant brought more to the beach, who were taken on board and feasted, six of them eating as much as would have satisfied twenty Spaniards. The first Indian had pointed to the sky, as if to inquire whether the Europeans had descended from thence; and they all wondered that the ships should be so large and the men so small. They were in general dressed and armed like the first visiter. They had short hair, and carried their arrows stuck in a fillet bound round their heads. They ran with amazing swiftness, and devoured their meat raw as soon as it was obtained. These tribes practised bleeding, by rudely cupping the part affected, and produced vomiting by thrusting an arrow eighteen inches long down the throat of the patient."

AGENTS.

BRISTOL, Pa.—*Anthony Swaim.*
FRANKFORD, Pa.—*John Griscom.*
MOUNT HOLLY, N. J.—*Samuel Bullock.*
MORRISVILLE P. O. Pa.—*Hector C. Ivins.*
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